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ABSTRACT

This paper explores the meaning of Total Quality Management (TQM), examines the development of the concept, and assesses the application of TQM to education. In summary, TQM has the following points of relevance for education: (1) The interest and welfare of every student must be a primary concern; (2) the authoritarian management model does not produce students who think for themselves; (3) learning cannot flourish in the competitive atmosphere that is created by traditional evaluation; and (4) building educational quality during the process is less costly than attempting to build quality through inspection at the end of the process. A conclusion is that not only can TQM be applied to education, it should be applied. (LMI)

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CAN DEMING'S CONCEPT OF TOTAL QUALITY MANAGEMENT BE APPLIED TO EDUCATION?

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Can Deming's Concept of Total Quality Management Be Applied to Education?

Total Quality Management (TQM) seems to be a movement that is influencing many areas of modern life. According to Bonstingl (1992): "This movement is spawning a new American revolution, as *quality* becomes our watchword in every aspect of life" (p. 4) The emphasis on quality following the ideas of W. Edwards Deming has affected the thinking of those in business, government and many in education. It will be the purpose of this paper: first, to explore what is actually meant by Total Quality Management, second, how the concept has grown and developed, and finally, can it really be applied to all areas of human endeavor, specifically to education.

Defining Total Quality Management requires us to consider the thought of Deming historically and its successful application by the Japanese following World War II. "The story of TQM, as many of us know, is entwined with the legend of Japan's phoenix-like resurrection from the ashes of World War II. Japanese industrial leaders insist this could not have happened without the help of Deming and his fellow American statistical experts, Joseph M. Juran and Armand Feigenbaum." (Bonstingl, 92, p. 4) It was Deming who convinced the Japanese that a world market would demand higher quality goods than the Japanese had had a reputation for up to that time, and that following a total quality management approach would assure the rapid capture of markets around the world. These predictions proved correct as history has proved but it was not until the 1970s that the work of Deming became better known in the United States. "It was at that time that American manufacturers' bottom lines began to bleed red ink, as customers the world over registered their preference for Japanese goods over American products. The reason for this preference was, in most cases, a simple one: Japanese items had consistently better quality at competitive prices." (Bonstingl 1992, p. 5) It was this obvious success for Deming's quality orientation to production which finally attracted American industry and which caught the attention of other fields, including education. Deming's 14 Points seemed to be the most promising approach to improvement in quality in American industry and for other organizations which sought to improve quality of production, whether of goods or services.

Enid Hilton Brown is a consultant for industry on TQM and a member of Deming's Detroit Study Group who feels that Deming's concepts on quality can be applied to any organization. According to Brown in an interview with Brandt (1992): "Dr. Deming's work applies to every organization in the world. It applies to corporations, universities, service organizations, countries, families, and certainly to schools. Deming's work provides a conceptual framework for understanding any system" (p. 28.) It is this emphasis, that TQM can benefit any type of system, that has attracted attention not only from profit-seeking corporations and small businesses, but also from strictly service-oriented organizations , not-for-profit school systems and institutions of higher education.

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What exactly, then, are the principles of TQM that have had such an influence on institutional thinking and theory. Bonstingl (1992) again alludes to what he calls the "Four Pillars of Total Quality." He discusses them as follows:

> 1) The organization must focus, first and foremost, on its suppliers and customers. In a TQM organization, everyone is both a customer and a supplier.
>
> ...
>
> 2) Everyone in the organization must be dedicated to continuous improvement, personally and collectively. The Japanese call this ethos *kaizen* , a societywide covenant of mutual help in the process of getting better and better, day by day.
>
> ...
>
> 3)The organization must be viewed as a system, and the work people do within the system must be seen as ongoing processes. Deming and others suggest that more than 85 percent of all the things that go wrong in any organization are directly attributable to how the organization's system and processes are set up.
>
> ...
>
> 4) The success of Total Quality Management is the responsibility of top management. Without concerted, visible, and constant dedication to making TQM principles and practices part of the deep culture of the organization, efforts are doomed to fail (Bonstingl, p. 6–7).

These four principles would certainly seem to have direct implications for any organization and the way it functions, including educational ones. Bonstingl (1992) feels that, with regard to the first principle, the student is indeed both a customer as well as a worker "whose product is essentially his or her own continuous improvement and personal growth." (p. 6) The second principle would have educational implications in that a continuous growth concept for students would cause educators to widen their theory of intelligence to include the ideal of "multiple intelligences" for each student and that the concept of grading and assessment must be reexamined. Student success, which has been too often limited by current assessment programs, would be seen in a much wider perspective.

The third principle dealing with organizations as systems would look on any problems in the organization as related to the way the processes of the organization are set up. Bonstingl feels that in the TQM concept: "Every system is made up of processes , and the improvements made in the quality of those processes in large part determine the quality of the resulting products" (p. 7). In education, the teaching/learning process would be the important thing to evaluate since outcomes in terms of student achievement are to a large extent determined by the quality of the processes, provided by the educational organization.

The fourth principle of TQM is concerned with leadership, in that it is the culture of the organization, set by top leadership, that will determine whether TQM will succeed or fail. It is the responsibility of top management to "set the tone" or culture in

which members can do their best work. In education this would mean allowing students and teachers to improve the quality of their performances by following TQM principles as their guideposts.

Bonstingl's four pillars of TQM would thus seem to have direct applicability to the area of education. Brandt (1992) also feels that Total Quality Management is not a completely new concept in education. He states:

> The basic values of the quality Movement represented in the work of W. Edwards Deming, are hardly novel to educators. Our professional literature is filled with tributes to cooperation rather than competition, intrinsic rather than extrinsic rewards, and supervision as helping people instead of evaluating them. (p. 3)

Brandt feels that in practice, however, educators may not have implemented these ideas as fully as they might have in the "real world."

Frank Betts (1992) agrees that attempts to implement the concepts of Total Quality Management in education have not been wholehearted. "Our piecemeal change efforts of the last decade have taught us a valuable lesson about Total Quality Management: we must seek improvement through systemic change" (p. 38). Betts goes on to explain that efforts at educational reform since 1950 have met with little success and that these reforms have failed because they have not kept up with changes in society and society's expectations for the schools. He feels that what is needed is a change in model or paradigm in education which implies a change in system. "The inevitable conclusion from the evidence at hand is that the old system is no longer adequate to the task" (p. 41). What is called for, according to Betts, is a movement from a deterministic to a purpose-seeking system. "This shift in emphasis can accurately be characterized as moving from an emphasis on instruction to an emphasis on learning" (p. 41). A total change toward an entire system's emphasis is what is needed in education if the principles of Total Quality Management are to be successful. Changing an entire educational system is not an easy task, nor is it something that is done overnight. This is all the more the case in a system which is as complicated and involved as education. Betts feels that an effort to change the educational system in the direction indicated by TQM has not yet been made.

System-thinking is certainly a major aspect of TQM as Enid Brown (Brandt, 1992) points out. Part of this approach is the idea that change is something that may not be immediately visible or measurable. She states:

> And in system thinking you recognize that some changes may not have an impact immediately; it may be down the road. What you do with a child in kindergarten may have an effect--positive or negative--20 years later. But too many policymakers want to measure every quarter (or every marking period!),

> just as corporations have done. Copying industry models can be terribly destructive. We hear of 'benchmarking efforts': look for 'best practices' at successful companies or schools. Wrong! According to Dr. Deming, experience teaches nothing without theory. We must apply our experiences to give meaning--to learn. All too frequently schools (and businesses) want to act *before* planning. Constructing a plan and applying a theory have to come first. (p. 29)

What this seems to imply is that overemphasis on measurable results in industry or education is not the important thing. What matters most is a change in thinking about what we are doing and learning from our own attempts at change. What works for others may not, and probably will not, work completely for your particular situation.

The question of evaluation is one which practitioners in education have long struggled with and is one which TQM addresses directly since it has an important bearing on its approach to systems. As was mentioned, TQM is not overly concerned with immediate, measurable results. The grading system in current educational use is one that creates winners and losers, as Brown (Brandt, 1992) points out:

> And what is interesting with win-lose is that no matter who "wins", there must be losers, so we all lose. Dr. Deming's Point Number 8 is: Drive out fear, create trust, create a climate for innovation. Well, grading drives *in* fear, creates an environment in which losers are being constantly identified. And even the students with the A+ grades are being told that their value, their importance, is in how they are ranked, not in who they are. If the aim of the system is to create joy in learning, then all students should win. (p. 30)

The question of grading again brings in the concept of inspection as found in industry and to which Deming was opposed as far as TQM was concerned. Deming felt that inspection was not the way to improve quality; rather, quality was to be improved by involving everyone in the total process of production all along the way, not just at the end. Brown (Brandt, 1992) points this out:

> Today the grading approach is much like the old industry technique of inspection at the end of the line--product inspection. Dr. Deming warns of the dangers of dependence on inspection.
>
> The alternative is to focus on process. How can we improve the learning process? (p. 30)

Thus, the emphasis in education should be on process and not inspection, on the system and not on the individual, if the TQM concept is to be followed. This latter point is especially pertinent to teacher evaluation. According to Brown (Brandt, 1992): "If it is a system issue, don't try to solve the problem by focusing on individuals, much less threatening them" (p. 30). Brown is saying basically that individuals often do not have

complete control over their performances due to factors or problems in the system or the organizational environment, whatever those might be. The key to improving performance is not to judge or threaten individuals, but to involve individuals in improving the system. This is not to say that some individuals are not performing satisfactorily and might do better in another profession and should be counseled in that direction. It is to say that all individuals can contribute and learn, and that often times it is the fault of the environment of the system that they are not able to do so.

Walton (1990), following Deming, describes what she calls the "85-15 Rule" relating to systems and their relationship to individuals. She feels that instead of looking for persons to blame when there is a problem in a system, it is far better to look for a problem with the system:

> In the American style of management, when something goes wrong, the response is to look around for someone to blame or punish or to search for something to " fix" rather than to look to the system as a whole for improvement. The 85-15 Rule holds that 85 percent of what goes wrong is with the system, and only 15 percent with the individual or thing. (p. 20)

The fundamental question of the applicability of Deming's principles on Total Quality Management to education is one that still troubles many educators according to Paola Sztajn (1992) . She is concerned with the suitability of the industry model to the educational setting and feels that Deming's approach only shifts the model from that of Frederick Taylor to that of Edwards Deming, and that this is not really a change in model but a change in metaphor. The model still remains a business model. Sztajn explains:

> We are still using economic principles and vocabulary to express educational ideas. We are still allowing economy and production to shape and determine our understanding of education. We are still seeing students as raw materials to be processed in the most efficient way. (p. 36)

Thus following TQM, according to Sztajn, is still following the production-economic model, still considering students as products of the production process. Sztajn feels that if the production model must be kept for education, it cannot be a "mass-production" model. She explains: "Our best products cannot be mass-produced. Each has to be unique, and it is precisely this uniqueness and its endless range of possibilities that makes it valuable" (p. 37). In place of the metaphor of mass-production, she proposes "that we consider the metaphor of education as a collaborative work of art--or even as love" (p. 37). The problem with the business/production model for education persists and causes many educators to view Total Quality Management with some concern and reservation.

Blankstein (1992) discusses the question of the business/education similarity

and points out that the model of business has changed--it is no longer that of Frederick Taylor who emphasized mass production and inspection to assure quality. Blankstein goes on to indicate that the business model proposed by Deming does contain principles that have direct implications for education and also notes problems which education will have in implementing Deming's concepts. The first area of similarity would be the emphasis Deming places on maintaining constancy of purpose in the organization. Blankstein explains:

> The first principle we might apply to improve schools is maintaining a constancy of purpose. American management's focus on short-term goals and outcomes is evidenced in an emphasis on quarterly profits, wide acceptance of corporate takeovers for quick profit, and a view of quality and training as an "expense" rather than an "investment." This short sightedness is also evident in schools; for example, when students who are not learning are promoted and when teachers teach to the test. These are *not* the fault of the teachers, however, but, rather, inherent flaws in the *system*. (p. 72)

When students are allowed to advance in their schooling without learning skills needed for the next level, there can be no constancy of purpose in their educational program nor in the system which allows such practices to continue.

Another principle of Deming with applicability to education would be that of building-in quality <u>now</u> and not relying on inspection at a later date to assure quality. Keith Geiger, president of the NEA, (1989) has this to say:

> We worry about kids when they reach 14, 15, or 16 years old and discover they don't have enough math or science...If we concentrated more of our time and energy on kids in kindergarten to 3rd grade, then we wouldn't have to invest so much time and money [later].

For Deming, quality is not something that can be added at the end of the process but must be built in from the very beginning. As Geiger points out, this is certainly the case when dealing with a child's education. As teachers in high schools are finding out, for children who do not receive a quality education in the early grades, their chances of receiving a quality education on the secondary level are greatly diminished. "Build in quality now" is a principle of Deming's that certainly needs to be applied to every level of education.

Blankstein (1992) also feels that Deming's principle of continuously striving to improve the entire system needs to be applied to education. He also accepts Deming's position that system improvement will result in improvement for each member of that system. "The ultimate intent of improving the system is to narrow the amount of variation within it, bringing *everyone* toward the goal of perfection" (p. 73). Another aspect of this emphasis on total system improvement is that of involving all in the system in improving that system and not blaming a particular individual.

> Rather than blaming any individual, they collect relevant data on the situation, define a possible opportunity to improve the process, test the change in the system, observe the results, and permanently implement the change if it proves effective. (p. 73)

This last point leads to Deming's criticism of goal setting and evaluation of performance by quantitative methods. Deming (1988) puts it this way:

> If you have a stable system, there is no use to specify a goal. You will get whatever the system will deliver. If you have not a stable system, then there again is no point in setting a goal...Focusing on outcome is not an effective way to improve a process or an activity. (p. 76)

This would seem to run counter to much of what has been written in recent years about educational improvement and change. Not to have goals certainly seems to go against much of the educational reform literature that has been published in the past few years. What Deming is really saying is that a well functioning system, with all members seeking improvement collectively, will already be goal-oriented and will not need to become goal-oriented or consider its goals as an after-thought.

The question of quantitative evaluation, as Blankstein (1992) observes, only increases fear in the individual and this fear is counterproductive to change. "Fear creates an insurmountable obstacle to any improvement" (p. 74) This is in agreement with Deming's point 8 which calls for the removal of fear as a motive for system improvement. In education, individual evaluation causes fear. Blankstein goes on:

> If a teacher is to be evaluated, and the system for evaluation is ultimately subjective, then the teacher's fate is in the hands of the principal. This leads to politics, concealment of mediocre work, and mindless adherence to regulations. It also stifles innovation or improvement of the system. (p. 74)

Again, it comes back to the importance of the system's improvement as paramount as opposed to concentrating on evaluating the individual and emphasis on the individual's improvement . This is a major emphasis of Deming and his approach to quality management. Thus Blankstein sees Deming's principles as directly impacting on key concerns in education.

One emphasis of Total Quality as a philosophy which goes against the grain of some current educational thinking is what the Japanese call *kaizen* which implies a dedication to mutual improvement. The key word here would be mutual . Basically what is meant by this term is that improvement must be made through the joint and collective effort of all members of the system and not in isolation or individually. This concept goes against the American ethos of the "rugged individual" who can fend for him or her self, and can succeed on their own. The "self-made man" value is deeply

ingrained in Americans, probably stemming from the heroes of our past who had to face adversities on their own in shaping a new nation. The immigrants who came to this country in large numbers likewise had to endure and meet challenges to a great extent on their own. It is therefore very easy to understand why an idea such as mutual or group improvement would not be well received by many in this country. This would be especially so with regard to something like education which seems to be such an individual and even private domain and concern. Total Quality as a philosophy looks upon growth and improvement in all areas of life as something that must be a group effort. As Bonstingl (1992) puts it: "We now understand that the only way we can ensure our own growth is by helping others to improve little by little, day by day" (p. 5). This is a fundamental tenet of Total Quality Management: namely, that improvement will occur only as individuals work together as a team to make continuous efforts to change the performance of all in a positive direction in an incremental fashion. This latter point is important to Total Quality thinking since it sees improvement as being something gradual, something that will not happen over night. It happens "little by little." Improvement in quality will be a process that will never end; Deming is very strong on this point. Improvement will be a never-ending process but one which will require everyone working, not alone and in isolation, but together and for the mutual good of all, forever.

Applying this concept to education is something that will not be done easily, since it will mean making painful changes in many areas of current practice. *Kaizen* will be resisted as something that only the Japanese can do and is not the "American" way of doing things. This was the position of American industry until very recent times. It has only been with the evident success of the Total Quality Management approach of Deming in Japanese industry that the value of this system's approach in American industry has been recognized. Some of the areas in education that will be impacted by following *kaizen* will be grading practices, teacher evaluation, and teaching strategies. It remains to be seen how deeply entrenched are educators in their current practices and how resistant they will be to this important principle of Total Quality Management.

Another important aspect of quality improvement according to Joseph M. Juran is the importance of "customers" in the improvement of quality. Juran feels that customers are "all persons who are impacted by our processes and our products" (Juran, p. 8). Juran goes on to differentiate two types of customers: internal customers are those who are within the institution and external customers who are affected by the products of the institution. Thus, employees are to be considered as customers and to be highly valued for their contributions to the institution. The importance of each member of the organization is emphasized by Ishikawa (1985) as a difference in appraoch between Japanese and American management. He explains:

> If people are treated like machines, work becomes uninteresting and unsatisfying. Under such conditions, it is not possible to expect products with good quality and high reliability. The rate of absenteeism and the rate

of turnover are the measures one can use in determining the strengths and weaknesses of management style and worker morale in any company. (p. 25)

Seeing workers as customers and intelligent collaborators in the production process goes against the thinking and management theory of Frederick Taylor who emphasized the worker as a mere cog in the machine and as unable to make any contributions to decision-making in the production process. Coming from an educational perspective, Bonstingl (1992) agrees that total quality thinking in education requires a new approach to the treatment of both students and teachers.

> Deming encourages educators to create school environments in which strong relationships of mutual respect and trust replace fear, suspicion, and division; and in which leadership from administrators and policymakers empowers students and teachers (as front-line workers of the school) to make continuous improvements in the work they do together. (p. 18)

The emphasis should be on mutual learning on the part of both the student as well as the teacher, not on evaluation. (Deming 1992) Again, inspection at the end of the process is not the way to improve quality according to Deming. Assessment needs to be part of the on-going process of learning. Again Bonstingl states:

> Assessment for diagnostic and prescriptive purposes should inform every point along the line in the educational production process, providing teachers and students with a solid foundation for continuous improvement toward optimal success, rather than a judgmental "mark" or other end-of-the-line symbols of learning. (p. 19)

The learning process should be characterized by mutual effort, not by adversarial competition. This is certainly in agreement with TQM's emphasis on eliminating inspection as part of the production process.

Another important emphasis taken from TQM is the elimination of the dichotomy of product and process. Those who emphasize the product see it as end in itself and do not consider the importance of the process. Bonstingl (1992) describes them thus:

> Product-oriented people focus only on the results at the end of the process (point B). They are comfortable in dichotomistic modes of thinking and acting, so they tend to view the end product as an objective separate from the entire process. If they concern themselves at all with the process leading to the objective, it is only to think of it as a nuisance, not as an opportunity for growth and learning. All effort is thus expended on the speedy acquisition of the goal. The product is viewed as a static end-point. (p. 24)

Process-oriented persons, on the other hand, are aware of the dynamic relationship between product and process and see the product not as a final goal, but as a point of departure for further processing. "They view the product not as a static end-point, but

departure for further processing. "They view the product not as a static end-point, but as a dynamic access-point, leading to other processes and products" (Bonstingl, 1992, p. 25). Such people are interested in the quality of the process and in assessing the those processes in an ongoing fashion with the purpose of constant improvement in the process and with the understanding and conviction that, as the processes improve, the products themselves are bound to improve. From an educational perspective, this would imply that education cannot be seen as an end product that occurs at a particular point in time and stops, with no concern for the process and the inputs into that process, and the ongoing nature of that process. Education is a process that is continuous and does not have an end-point. It can be constantly improved depending on the inputs which it receives. These inputs must come from all levels of the organization and from the community itself if improvement is to be constant. Peter Senge (1990) puts it this way: "To truly excel in the future, organizations will have to tap the commitment and capacity to learn of people at all levels in an organization" (p. 4). Top management cannot be the only source of input into the process. All members of the organization must be enlisted to participate if constant improvement in quality is to be made. The community, or the external customers, as Bonstingl calls them, must also have input into the educational process. Bonstingl (1992) puts it this way:

> Many school leaders have found it helpful to form a school-community Quality Council to determine needs and broad systemic goals, and to enlist the active support of all sectors of the community in accomplishing a Total Quality transformation. (p. 45)

Input from the community is of great importance if TQM is to be successful.

In summary, therefore, Total Quality Management does have the following points of relevance for education:

1. "The Customer must come first." The interest and welfare of the student, of every student, must be the primary concern of all involved in providing educational services.

2. The authoritarian model of management of Frederick Taylor does not serve the educational system well. It creates students who do not think for themselves but who are always looking for ready-made answers.

3. Grading according to the bell-shaped curve is inefficient for it creates an atmosphere of fear and world of winners and losers. Learning cannot flourish in such circumstances.

4. Improving quality by building it in during the process will be less costly, not more. For education, this would mean that social promotion in any grade, but especially in the early grades, is a major source of problems in educational quality.

Skills which are not acquired at the time of instruction simply cannot be postponed until a later date. As industry has discovered, quality is not obtained by inspection at the end of the process but by building in quality all throughout the process. Quality in education cannot be postponed until a child needs remediation. At this point it may be too late.

In conclusion, in answer to this paper's question: "Can Deming's Concept of Total Quality Management be Applied to Education?", the answer in this author's estimation is a profound Yes. Not only can it be applied, but, in the interest of improving educational quality, it should be applied. The emphases which Deming makes in his approach to improving quality have direct implications for education which this paper has attempted to point out.

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